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The cost of elective orthopedic surgery on Syrian refugees: A single-center experience

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Abstract
Aim: The Syrian Civil War is associated with several public health problems. The number of Syrian refugees in Turkey has reached 3.691 million in the first 8 years after the beginning of the war. Syrian refugees that settle in Turkey visit hospitals seeking treatment for injuries unrelated to the war. We aim to assess the financial impact of elective orthopedic surgeries of Syrian refugees in our hospital.
Material and Methods: Data were collected from the files of a total of 335 patients that were treated in our hospital between January 2015 and December 2019. Patients were chosen using the International Statistical Classification of Diseases and Related Health Problems (ICD) codes. Treatment information was used to calculate treatment costs. Age, length of stay, gender, whether an implant was used for the operation, type of operation, and treatment costs were recorded.
Results: The study consisted of 335 patients, 224 (66%) female, 111 (34%) male. Two-hundred-twenty-three out of 335 patients were treated by using orthopedic implants. Treatment-related costs on Syrian refugees peaked in 2018. The longest average length-of-stay was also in 2018. The average length-of-stay was 6.3 days. The total cost of the patients treated between 2015-2020 was calculated as 1,309,582 Turkish Liras (187,083,143 American Dollars).
Discussion: Syrian refugees create an economic strain on the healthcare system of the countries that they settle in. The increasing number of refugees is likely to worsen this financial burden.

Keywords
Syrian refugee; War; Elective surgery; Orthopedics, Cost

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Introduction

After 2011, which marks the start of the Syrian civil war, an estimated total of 5.5 million Syrians had to leave Syria to migrate to other countries as refugees. The unending conflict in the country leads to one of the greatest refugee crises of the century. Turkey, with its 911 km border with Syria, is one of the countries that has been most affected by this crisis. Recent reports estimate that approximately 50% of Syrians have left their country. The number of Syrian refugees in Turkey has reached 3.691 million in the first 8 years following the beginning of the war. Syrian refugees that have started to settle in Turkey visit hospitals seeking treatment for injuries unrelated to the war. The traumatic injury treatments, together with a variety of health expenditures, have cost the Turkish economy over 10 million dollars. Most of the available studies present the treatment of refugees' traumatic injuries [1,2,3]. However, there are no studies addressing the financial cost of orthopedic elective procedures.

In this study, we evaluate the data we obtained from the records of our hospital in Gaziantep, Turkey, one of the cities that has the highest number of Syrian refugees. Our aim is to assess the cost of elective orthopedic surgery of Syrian refugees for the Turkish healthcare system. Our hypothesis is to show the cost and properties of orthopeadics elective procedures on Syrian refugees and if the process goes on, whether the healthcare system will have to do more or not.

Material and Methods

The study was approved by Gaziantep University institutional reviewer board (2020/25). According to our data in hospital archives, there were 872 patients who applied to hospital as Syrian refugee between 2015-2020. Patients were categorized by year, and the data were calculated for each year separately. Exclusion criteria were as follows: (a) traumatic injuries, (b) emergency surgery, and (c) patients that were not Syrian refugees. Patients who underwent elective orthopedic surgery procedures were included in the study. After application of the exclusion criteria, 335 patients who were treated in not urgent procedureswere included in the study. Data were collected from the files of a total of 335 patients that were treated in our hospital. Patients were chosen using ICD codes. The obtained data were evaluated retrospectively. Age, length of stay, gender, whether an implant was used for the operation, type of operation, and treatment costs were recorded. Treatment costs of all patients were covered by the state social security institution policies, so the refugees did not pay any money in this treatment process. Even though the Syrian War started in 2011, for data accuracy and accessibility, we chose to include patients that were treated starting from January 2015.

Results

This study includes a total of 335 patients who underwent elective orthopedic surgery in our clinic. There were 224 (66%) female, 111 (34%) male patients in the study (Figure 1). The mean age of all patients was 44.9 (range:1-77) years. The average length-of-stay was 6.3 (SD+/- 5,181) days. Length-of-stay, and treatment cost values by year are presented in Figures 2 and 3.

Two-hundred-twenty-three (66,2%) out of 335 subjects received orthopedic implants. The treatments applied to the subjects were as follows: arthroplasty 112 (33,4%); hand surgery 45 (13,4%); pediatric orthopedic intervention 98 (29,2%); other (e.g. surgery for spine, sports injuries, and ingrown nails) 80 (23,9%). The total cost of the patients treated between 2015-2020 was calculated as 1,309,582 Turkish Liras (187,083,143 American Dollars). We found that treatment-related costs peaked in 2018. The longest average length-of-stay was also in 2018 (Figure 3).

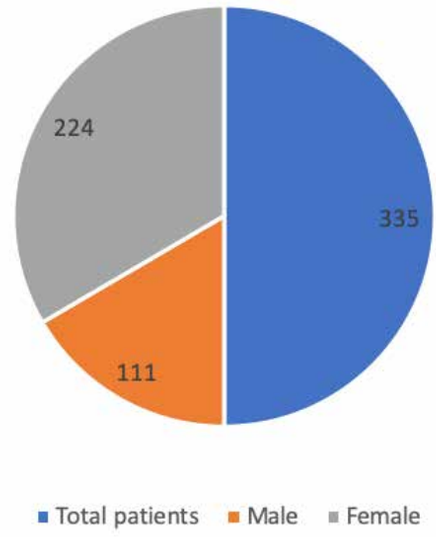

Figure 1. Total patients and gender graphic

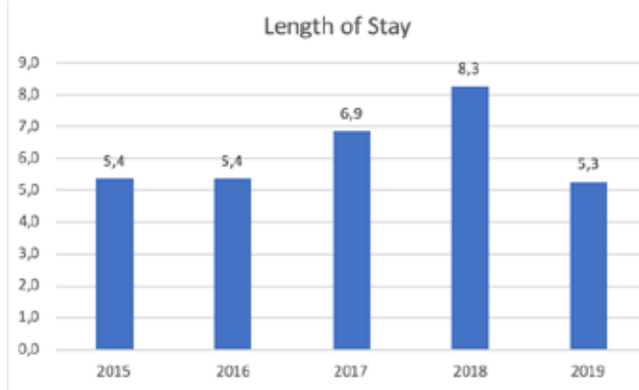

Figure 2. Mean Length of Stay

Figure 3. Cost according to years (Turkish Liras)

Discussion

With the increase of Syrian refugees, health expenditures and the number of elective orthopedic surgery have increased. The Syrian Civil War has led to the well-documented decimation of the Syrian healthcare system [4]. Many hospitals, ambulances, and medical service complexes became unusable due to the war, and this caused a serious healthcare service gap [5]. These establishments continued to provide emergency treatment services to trauma patients, but poorly. A sizable number of people tried and sought medical care in neighboring countries for better treatment.

Turkey received a significant number of Syrian patients and refugees due to its long border and proximity to northern Syrian districts, which were more affected by military operations. This has led the Syrian Civil War to indirectly impact Turkey, which also explains the especially high number of Syrian refugees in Gaziantep [6].

There is a wide variety of possible war-related injuries [7]. A Croatian study reports that war injuries mostly affect muscles, soft tissues, and bones, followed by the abdomen, nervous system, and thoracic region [8]. Two different studies from Turkey indicate that the majority of war injuries were in extremities [1,6]. Extremity injuries are the most common injuries that require orthopedic procedures. As refugees began to settle in the countries they migrate to, elective treatment becomes a more important concern. Our study focuses on the elective (non-traumatic) orthopedic surgical treatment of Syrian refugee patients and the associated costs. In the current literature, we were unable to identify a study that attempts to determine the cost of elective treatment of Syrian refugees.

There is a wide range of conditions that require elective orthopedic surgery. These include spinal surgery, arthroplasty, hand surgery, tumor removal, and sports injuries. Therefore, many different patient groups are treated in orthopedic clinics. Our study includes examples of all of the above-mentioned treatment methods.

The increasing number of refugees has also increased their rate of admissions to hospitals [9]. Van Berlaer reported that refugees suffer primarily from respiratory, dental, skin, and digestive diseases [10]. Our study focuses on a specific group of patients, where the majority of our subjects were treated with arthroplasty.

The health care costs of refugees from countries with conflict and violence were found to be higher than those of conflict-free countries. It is well known that the healthcare costs of refugees from countries with civil war are directly proportional to the duration of the war [11]. Due to the ongoing war, refugees that need treatment still burden the healthcare system. In our study, we found that the refugees' healthcare costs have been steadily increasing since 2015. This can be explained by the increasing number of refugees and the subsequently higher number of hospital admissions.

Unlike other surgeries, orthopedic surgery requires extensive knowledge of biomechanics. Surgical implants are used for the treatment of various diseases. However, these implants are also known to increase medical expenses. We found that implants are one of the leading factors that cause the treatment to be costly. The combination of hospitalization, surgery, and surgical implants adds up to result in a significant treatment cost.

Another remarkable point in our study is the gradual decrease in the mean age of the patient population from 2015 to 2019. This can be explained by the increasing migration rates and the increased rates of hospital admissions by the younger population.

We were able to access 18 studies that address the medical treatment of Syrian refugees in Turkey, all of which primarily concern mental health, emergency care, women's health, and chronic diseases [12]. Orthopedics is closely associated with war-related injuries. However, current studies mostly focus on emergency patients, and there is a lack of information regarding the elective treatment of Syrian refugees that are settling in Turkey. In this respect, our study is unique and will be a significant resource for future studies.

Our literature review revealed that cost was the most commonly cited barrier to healthcare access for Syrian refugees, namely provider, transportation, and medication costs [13,14]. In our study, the cost of all Syrian patients that received elective surgery in our clinic was calculated as approximately 1.3 million Turkish Liras. This figure includes only a specific group of patients that were treated only in our hospital. It can be said that the inclusion of other hospitals' expenditures concerning all patient groups will lead to a very large sum.

Also, our study has some limitations. First, this is a hospital-based study and does not reflect the perspective of the whole country. Our hospital is very close to Syria, so there are many patients who undergo war-related surgeries. But this is not enough to tell that these results give us information about all Syrian refugees in Turkey. And this study is a limited process, before 2015 we do not have all records about these patients' information, and our database does not give us enough information before 2015, so we started study from 2015.

Syrian refugees cause a financial burden on the healthcare system. The increasing refugee population leads to increased admissions to hospitals, further elevating this cost. However, the Turkish government provides access to healthcare both for their citizens as well as the refugees, where the costs of treatment are covered by the Social Security Institution. We conclude that the increasing number of refugees will likely worsen the current burden on the Turkish healthcare system.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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References

1. Kocamer Şimşek B, Dokur M, Uysal E, Çalıker N, Gökçe ON, Deniz İK, et al. Characteristics of the injuries of Syrian refugees sustained during the civil war. Ulus Travma Acil Cerrahi Derg. 2017;23(3):199-206. DOI:10.5505/tjtes.2016.95525.

2. Ozdogan HK, Karateke F, Ozdogan M, Cetinalp S, Ozyazici S, Gezercan Y, et al. The Syrian civil war: The experience of the Surgical Intensive Care Units. Pak J Med Sci. 2016;32(3):529-533. DOI:10.12669/pjms.323.9529.
3. Rizkalla N, Segal SP. Trauma during humanitarian work: the effects on intimacy, wellbeing and PTSD-symptoms. Eur J Psychotraumatol. 2019;10(1):1679065. DOI:10.1080/20008198.2019.1679065.
4. Ben Taleb Z, Bahelah R, Fouad FM, Coutts A, Wilcox M, Maziak W. Syria: health in a country undergoing tragic transition. Int J Public Health. 2015 ;60 (Suppl. 1):S63-72.
5. Kherallah M, Alahfez T, Sahloul Z, Eddin KD, Jamil G. Health care in Syria before and during the crisis. Avicenna J Med. 2012 ;2(3):51–3.
6. Karakus A, Yengil E, Akkucuk S, Cevik C, Zeren C, Uruc V. The reflection of the Syrian civil war to emergency department and assessment of hospital costs. Ulus Travma Acil Cerrahi Derg. 2013;19(5):429–33.
7. Coupland RM, Meddings DR. Mortality associated with use of weapons in armed conflicts, wartime atrocities, and civilian mass shootings: literature review. BMJ. 1999;319(7207):407–10.
8. Scope A, Farkash U, Lynn M, Abargel A, Eldad A. Mortality epidemiology in low-intensity warfare: Israel Defense Forces' experience. Injury. 2001;32(1):1–3.
9. Gulacti U, Lok U, Polat H. Emergency department visits of Syrian refugees and the cost of their healthcare. Pathog Glob Health. 2017;111(5):219–24.
10. Van Berlaer G, Carbonell FB, Manantsoa S, de Béthune X, Buyl R, Debacker M, et al. A refugee camp in the centre of Europe: clinical characteristics of asylum seekers arriving in Brussels. BMJ Open. 2016;6(11):e013963. DOI: 10.1136/bmjopen-2016-013963.
11. Tahirbegolli B, Çavdar S, Sümer EÇ, Akdeniz SI, Vehid S. Outpatient admissions and hospital costs of Syrian refugees in a Turkish university hospital. Saudi MedJ. 2016;37(7):809.
12. El Arnaout N, Rutherford S, Zreik T, Nabulsi D, Yassin N, Saleh S. Assessment of the health needs of Syrian refugees in Lebanon and Syria's neighboring countries. Confl Health. 2019;13(1):31.
13. Doocy S, Lyles E, Akhu-Zaheya L, Burton A, Burnham G. Health service access and utilization among Syrian refugees in Jordan. Int J Equity Health. 2016;15(1):108.
14. Rehr M, Shoaib M, Ellithy S, Okour S, Ariti C, Ait-Bouziad I, et al. Prevalence of non-communicable diseases and access to care among non-Camp Syrian refugees in northern Jordan. Confl Health. 2018;12(1):33.

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